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## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/921,159

DATE: 02/11/2002

TIME: 09:37:16

Input Set : A:\-68-1.app

Output Set: N:\CRF3\02112002\I921159.raw

3 <110> APPLICANT: Jegla, Timothy James  
 4 Witzel, Julie Dickson  
 5 ICAGEN, Inc.  
 7 <120> TITLE OF INVENTION: Slo2 and Slo4, Novel Potassium Channel Proteins from  
 8 Human Brain  
 10 <130> FILE REFERENCE: 018512-006810US  
 12 <140> CURRENT APPLICATION NUMBER: US 09/921,159  
 C--> 13 <141> CURRENT FILING DATE: 2002-01-17  
 15 <150> PRIOR APPLICATION NUMBER: US 60/249,112  
 16 <151> PRIOR FILING DATE: 2000-11-15  
 18 <160> NUMBER OF SEQ ID NOS: 38  
 20 <170> SOFTWARE: PatentIn Ver. 2.1  
 22 <210> SEQ ID NO: 1  
 23 <211> LENGTH: 3708  
 24 <212> TYPE: DNA  
 25 <213> ORGANISM: Homo sapiens  
 27 <220> FEATURE:  
 28 <221> NAME/KEY: CDS  
 29 <222> LOCATION: (1)..(3708)  
 30 <223> OTHER INFORMATION: human Slo2 potassium channel alpha subunit  
 32 <400> SEQUENCE: 1  
 33 atg gcg cgg gcc aag ctg ccg cgc tgc ccg tcc gag ggc aag gcg ggc 48  
 34 Met Ala Arg Ala Lys Leu Pro Arg Ser Pro Ser Glu Gly Lys Ala Gly  
 35 1 5 10 15  
 37 ccg ggg ggc gcc cca gcc ggc gcc gca gcc ccc gag gag cct cac ggg 96  
 38 Pro Gly Gly Ala Pro Ala Gly Ala Ala Ala Pro Glu Glu Pro His Gly  
 39 20 25 30  
 41 ctc agc ccg ctg ctg ccg gcc cgc ggc ggg ggc tcc gtg ggc agc gac 144  
 42 Leu Ser Pro Leu Leu Pro Ala Arg Gly Gly Gly Ser Val Gly Ser Asp  
 43 35 40 45  
 45 gtg ggc cag agg ctt cct gta gaa gat ttc agc ctg gac tcc tcc ctg 192  
 46 Val Gly Gln Arg Leu Pro Val Glu Asp Phe Ser Leu Asp Ser Ser Leu  
 47 50 55 60  
 49 tct cag gtc cag gtg gag ttc tac gtc aac gag aac acc ttc aag gag 240  
 50 Ser Gln Val Gln Val Glu Phe Tyr Val Asn Glu Asn Thr Phe Lys Glu  
 51 65 70 75 80  
 53 cgg ctg aag ctg ttc ttc atc aaa aac caa aga tgc agc ctg agg atc 288  
 54 Arg Leu Lys Leu Phe Phe Ile Lys Asn Gln Arg Ser Ser Leu Arg Ile  
 55 85 90 95  
 57 cgg ctg ttc aac ttc tcc ctg aag ctg ctc acc tgc ctg ctc tac att 336  
 58 Arg Leu Phe Asn Phe Ser Leu Lys Leu Leu Thr Cys Leu Leu Tyr Ile  
 59 100 105 110  
 61 gtg cgc gtc ctg ctc gat gac ccg gcc ctg ggc atc gga tgc tgg ggc 384

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62 Val Arg Val Leu Leu Asp Asp Pro Ala Leu Gly Ile Gly Cys Trp Gly
63          115          120          125
65 tgc cca aag cag aac tac tcc ttc aat gac tcg tcc tcc gag atc aac 432
66 Cys Pro Lys Gln Asn Tyr Ser Phe Asn Asp Ser Ser Ser Glu Ile Asn
67      130          135          140
69 tgg gct cct att ctg tgg gtg gag aga aag atg aca ctg tgg gcg atc 480
70 Trp Ala Pro Ile Leu Trp Val Glu Arg Lys Met Thr Leu Trp Ala Ile
71 145          150          155          160
73 cag gtc atc gtg gcc ata ata agc ttc ctg gag acg atg ctt ctc atc 528
74 Gln Val Ile Val Ala Ile Ile Ser Phe Leu Glu Thr Met Leu Leu Ile
75          165          170          175
77 tac ctc agc tac aaa ggc aac atc tgg gag cag atc ttc cgc gtg tcc 576
78 Tyr Leu Ser Tyr Lys Gly Asn Ile Trp Glu Gln Ile Phe Arg Val Ser
79          180          185          190
81 ttc gtc ctg gag atg atc aac act ctg ccc ttc atc atc acg atc ttc 624
82 Phe Val Leu Glu Met Ile Asn Thr Leu Pro Phe Ile Ile Thr Ile Phe
83      195          200          205
85 tgg ccg ccg ctg cgg aac ctg ttc atc ccc gtc ttt ctg aac tgc tgg 672
86 Trp Pro Pro Leu Arg Asn Leu Phe Ile Pro Val Phe Leu Asn Cys Trp
87      210          215          220
89 ctg gcc aag cac gcg ctg gaa aac atg att aat gac ttc cac cgt gcc 720
90 Leu Ala Lys His Ala Leu Glu Asn Met Ile Asn Asp Phe His Arg Ala
91 225          230          235          240
93 atc ctg cgg aca cag tca gcc atg ttc aac cag gtc ctc atc ctc ttc 768
94 Ile Leu Arg Thr Gln Ser Ala Met Phe Asn Gln Val Leu Ile Leu Phe
95          245          250          255
97 tgc acc ctg ctg tgc ctc gtt ttc acg ggg acc tgc ggc atc cag cac 816
98 Cys Thr Leu Leu Cys Leu Val Phe Thr Gly Thr Cys Gly Ile Gln His
99          260          265          270
101 ctg gag cgg gcg ggc gag aac ctg tcc ctc ctg acc tcc ttc tac ttc 864
102 Leu Glu Arg Ala Gly Glu Asn Leu Ser Leu Leu Thr Ser Phe Tyr Phe
103          275          280          285
105 tgc atc gtc acc ttc tcc acc gtg ggc tac ggt gac gtc acg ccc aag 912
106 Cys Ile Val Thr Phe Ser Thr Val Gly Tyr Gly Asp Val Thr Pro Lys
107      290          295          300
109 atc tgg cca tcg cag ctg ctg gtg gtc atc atg atc tgc gtg gcc ctc 960
110 Ile Trp Pro Ser Gln Leu Leu Val Val Ile Met Ile Cys Val Ala Leu
111 305          310          315          320
113 gtg gtg ctc cca ctg cag ttc gag gag ctc gtc tac ctc tgg atg gag 1008
114 Val Val Leu Pro Leu Gln Phe Glu Glu Leu Val Tyr Leu Trp Met Glu
115          325          330          335
117 cgg cag aag tca ggg ggc aac tac agc cgc cac cgt gcg cag acg gag 1056
118 Arg Gln Lys Ser Gly Gly Asn Tyr Ser Arg His Arg Ala Gln Thr Glu
119          340          345          350
121 aag cac gtg gtc ctg tgt gtc agc tcc ctc aag atc gac ctt ctc atg 1104
122 Lys His Val Val Leu Cys Val Ser Ser Leu Lys Ile Asp Leu Leu Met
123          355          360          365
125 gac ttc ctg aac gag ttc tac gcc cac ccc cgg ctc cag gac tat tac 1152
126 Asp Phe Leu Asn Glu Phe Tyr Ala His Pro Arg Leu Gln Asp Tyr Tyr

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127	370	375	380	
129	gtg gtc atc ctg tgc ccc acg gag atg gat gtc cag gtg cgc aga gtc	1200		
130	Val Val Ile Leu Cys Pro Thr Glu Met Asp Val Gln Val Arg Arg Val			
131	385 390 395 400			
133	ctg cag atc cct ctg tgg tcc cag cgg gtc atc tac ctc cag ggc tct	1248		
134	Leu Gln Ile Pro Leu Trp Ser Gln Arg Val Ile Tyr Leu Gln Gly Ser			
135	405 410 415			
137	gca ctc aaa gac cag gac ctc atg cga gcc aag atg gac aat ggg gag	1296		
138	Ala Leu Lys Asp Gln Asp Leu Met Arg Ala Lys Met Asp Asn Gly Glu			
139	420 425 430			
141	gcc tgc ttc atc ctc agc agc agg aac gag gtg gac cgc acg gct gca	1344		
142	Ala Cys Phe Ile Leu Ser Ser Arg Asn Glu Val Asp Arg Thr Ala Ala			
143	435 440 445			
145	gac cac cag acc atc ctg cgc gcc tgg gcc gtg aag gac ttc gcc ccc	1392		
146	Asp His Gln Thr Ile Leu Arg Ala Trp Ala Val Lys Asp Phe Ala Pro			
147	450 455 460			
149	aac tgc ccc ctc tac gtc cag atc ctc aaa cct gaa aac aag ttt cac	1440		
150	Asn Cys Pro Leu Tyr Val Gln Ile Leu Lys Pro Glu Asn Lys Phe His			
151	465 470 475 480			
153	gtc aag ttt gct gac cac gtg gtg tgt gag gag gag tgc aag tac gcc	1488		
154	Val Lys Phe Ala Asp His Val Val Cys Glu Glu Glu Cys Lys Tyr Ala			
155	485 490 495			
157	atg ctg gcg ctg aac tgc atc tgc ccg gcg acc tcc acc ctc atc acc	1536		
158	Met Leu Ala Leu Asn Cys Ile Cys Pro Ala Thr Ser Thr Leu Ile Thr			
159	500 505 510			
161	ctg ctg gtg cac acg tcc cgc ggc cag gag gga cag gag tct ccg gag	1584		
162	Leu Leu Val His Thr Ser Arg Gly Gln Glu Gly Gln Glu Ser Pro Glu			
163	515 520 525			
165	cag tgg cag cgc atg tat ggg cgc tgc tcc ggc aac gag gtg tac cac	1632		
166	Gln Trp Gln Arg Met Tyr Gly Arg Cys Ser Gly Asn Glu Val Tyr His			
167	530 535 540			
169	atc cgc atg ggt gac agc aag ttc ttc cgc gag tac gag ggc aag agc	1680		
170	Ile Arg Met Gly Asp Ser Lys Phe Phe Arg Glu Tyr Glu Gly Lys Ser			
171	545 550 555 560			
173	ttc acc tac gcg gcc ttc cac gcc cac aag aag tat ggc gtg tgc ctc	1728		
174	Phe Thr Tyr Ala Ala Phe His Ala His Lys Lys Tyr Gly Val Cys Leu			
175	565 570 575			
177	atc ggg ctg aag cgg gag gac aac aag agc atc ctg ctg aac ccg ggg	1776		
178	Ile Gly Leu Lys Arg Glu Asp Asn Lys Ser Ile Leu Leu Asn Pro Gly			
179	580 585 590			
181	ccc cgg cac atc ctg gcc gcc tct gac acc tgc ttc tac atc aac atc	1824		
182	Pro Arg His Ile Leu Ala Ala Ser Asp Thr Cys Phe Tyr Ile Asn Ile			
183	595 600 605			
185	acc aag gag gag aac tcg gcc ttc atc ttc aag cag gag gag aag cgg	1872		
186	Thr Lys Glu Glu Asn Ser Ala Phe Ile Phe Lys Gln Glu Glu Lys Arg			
187	610 615 620			
189	aag aag agg gcc ttc tcg ggg cag ggg ctg cac gag ggt ccg gcc cgc	1920		
190	Lys Lys Arg Ala Phe Ser Gly Gln Gly Leu His Glu Gly Pro Ala Arg			
191	625 630 635 640			

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193	ctg	ccc	gtg	cac	agc	atc	atc	gcc	tcc	atg	gtg	gcc	atg	gac	ctg	cag	1968
194	Leu	Pro	Val	His	Ser	Ile	Ile	Ala	Ser	Met	Val	Ala	Met	Asp	Leu	Gln	
195					645					650						655	
197	ggc	aca	gag	cac	cgg	cct	acg	cag	agc	ggc	ggg	ggc	ggg	ggc	ggc	agc	2016
198	Gly	Thr	Glu	His	Arg	Pro	Thr	Gln	Ser	Gly	Gly	Gly	Gly	Gly	Gly	Ser	
199				660					665					670			
201	aag	ctg	gca	ctg	ccc	acg	gag	aac	ggc	tcg	ggc	agc	cgg	cgg	ccc	agc	2064
202	Lys	Leu	Ala	Leu	Pro	Thr	Glu	Asn	Gly	Ser	Gly	Ser	Arg	Arg	Pro	Ser	
203			675					680					685				
205	atc	gcg	ccc	gtc	ctg	gaa	ctg	gcc	gac	agc	tca	gcc	ctg	ctg	ccc	tgc	2112
206	Ile	Ala	Pro	Val	Leu	Glu	Leu	Ala	Asp	Ser	Ser	Ala	Leu	Leu	Pro	Cys	
207		690					695					700					
209	gac	ctg	ctg	agc	gac	cag	tcg	gag	gat	gag	gtg	acg	ccg	tcg	gac	gac	2160
210	Asp	Leu	Leu	Ser	Asp	Gln	Ser	Glu	Asp	Glu	Val	Thr	Pro	Ser	Asp	Asp	
211	705					710					715					720	
213	gag	ggg	ctc	tcc	gtg	gta	gag	tat	gtg	aag	ggc	tac	cct	ccc	aac	tcg	2208
214	Glu	Gly	Leu	Ser	Val	Val	Glu	Tyr	Val	Lys	Gly	Tyr	Pro	Pro	Asn	Ser	
215				725						730					735		
217	ccc	tac	atc	gtc	agc	tcc	cca	acc	ctg	tgc	cac	ctc	ctg	cct	gtg	aaa	2256
218	Pro	Tyr	Ile	Val	Ser	Ser	Pro	Thr	Leu	Cys	His	Leu	Leu	Pro	Val	Lys	
219			740						745				750				
221	gcc	ccc	ttc	tgc	tgc	ctg	cgg	ctg	gac	aag	ggc	tgc	aag	cac	aac	agc	2304
222	Ala	Pro	Phe	Cys	Cys	Leu	Arg	Leu	Asp	Lys	Gly	Cys	Lys	His	Asn	Ser	
223			755					760				765					
225	tat	gaa	gac	gcc	aag	gcc	tac	ggg	ttc	aag	aac	aag	ctg	atc	atc	gtc	2352
226	Tyr	Glu	Asp	Ala	Lys	Ala	Tyr	Gly	Phe	Lys	Asn	Lys	Leu	Ile	Ile	Val	
227		770					775					780					
229	tcg	gca	gag	acg	gcc	ggc	aat	ggg	ctg	tac	aac	ttc	atc	gtg	cca	ctg	2400
230	Ser	Ala	Glu	Thr	Ala	Gly	Asn	Gly	Leu	Tyr	Asn	Phe	Ile	Val	Pro	Leu	
231	785					790					795					800	
233	cgg	gcc	tac	tac	aga	tcc	cgc	aag	gag	ctg	aac	ccc	atc	gtg	ctg	ctg	2448
234	Arg	Ala	Tyr	Tyr	Arg	Ser	Arg	Lys	Glu	Leu	Asn	Pro	Ile	Val	Leu	Leu	
235				805						810					815		
237	ctg	gac	aac	aag	ccc	gac	cac	cac	ttc	ctg	gaa	gcc	atc	tgc	tgc	ttc	2496
238	Leu	Asp	Asn	Lys	Pro	Asp	His	His	Phe	Leu	Glu	Ala	Ile	Cys	Cys	Phe	
239			820						825				830				
241	ccc	atg	gtc	tac	tac	atg	gag	ggc	tct	gtg	gac	aac	ctg	gac	agc	ctg	2544
242	Pro	Met	Val	Tyr	Tyr	Met	Glu	Gly	Ser	Val	Asp	Asn	Leu	Asp	Ser	Leu	
243			835					840					845				
245	ctg	cag	tgt	ggc	atc	atc	tat	gcg	gac	aac	ctg	gtg	gtg	gtg	gac	aag	2592
246	Leu	Gln	Cys	Gly	Ile	Ile	Tyr	Ala	Asp	Asn	Leu	Val	Val	Val	Asp	Lys	
247		850					855					860					
249	gag	agc	acc	atg	agc	gcc	gag	gag	gac	tac	atg	gcg	gac	gcc	aag	acc	2640
250	Glu	Ser	Thr	Met	Ser	Ala	Glu	Glu	Asp	Tyr	Met	Ala	Asp	Ala	Lys	Thr	
251	865					870				875					880		
253	atc	gtc	aac	gtg	cag	acc	atg	ttc	cgg	ctc	ttc	ccc	agc	ctc	agc	atc	2688
254	Ile	Val	Asn	Val	Gln	Thr	Met	Phe	Arg	Leu	Phe	Pro	Ser	Leu	Ser	Ile	
255				885						890					895		
257	acc	acg	gag	ctc	acc	cac	cct	tcc	aac	atg	cgc	ttc	atg	cag	ttc	cgc	2736

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258 Thr Thr Glu Leu Thr His Pro Ser Asn Met Arg Phe Met Gln Phe Arg
259          900          905          910
261 gcc aag gac agc tac tct ctg gct ctt tcc aaa cta gaa aag agg gag 2784
262 Ala Lys Asp Ser Tyr Ser Leu Ala Leu Ser Lys Leu Glu Lys Arg Glu
263          915          920          925
265 cga gag aat ggc tcc aac ctg gcc ttc atg ttc cgc ctg ccg ttc gcc 2832
266 Arg Glu Asn Gly Ser Asn Leu Ala Phe Met Phe Arg Leu Pro Phe Ala
267          930          935          940
269 gcc ggc cgc gtc ttc agc atc agc atg ttg gac aca ctg ctc tac cag 2880
270 Ala Gly Arg Val Phe Ser Ile Ser Met Leu Asp Thr Leu Leu Tyr Gln
271 945          950          955          960
273 tcc ttc gtg aag gac tac atg atc acc atc acc cgg ctg ctg ctg ggc 2928
274 Ser Phe Val Lys Asp Tyr Met Ile Thr Ile Thr Arg Leu Leu Leu Gly
275          965          970          975
277 ctg gac acc acg ccg ggc tgc ggg tac ctc tgt gcc atg aaa atc acc 2976
278 Leu Asp Thr Thr Pro Gly Ser Gly Tyr Leu Cys Ala Met Lys Ile Thr
279          980          985          990
281 gag ggc gac ctg tgg atc cgc acg tac ggc cgc ctc ttc cag aag ctc 3024
282 Glu Gly Asp Leu Trp Ile Arg Thr Tyr Gly Arg Leu Phe Gln Lys Leu
283          995          1000          1005
285 tgc tcc tcc agc gcc gag atc ccc att ggc atc tac cgg aca gag agc 3072
286 Cys Ser Ser Ser Ala Glu Ile Pro Ile Gly Ile Tyr Arg Thr Glu Ser
287 1010          1015          1020
289 cac gtc ttc tcc acc tgc gag ccc cac gac ctc aga gcc cag tcc cag 3120
290 His Val Phe Ser Thr Ser Glu Pro His Asp Leu Arg Ala Gln Ser Gln
291 1025          1030          1035          1040
293 atc tgc gtg aac gtg gag gac tgt gag gac aca cgg gaa gtg aag ggg 3168
294 Ile Ser Val Asn Val Glu Asp Cys Glu Asp Thr Arg Glu Val Lys Gly
295          1045          1050          1055
297 ccc tgg ggc tcc cgc gct ggc acc gga ggc agc tcc cag ggc cgc cac 3216
298 Pro Trp Gly Ser Arg Ala Gly Thr Gly Gly Ser Ser Gln Gly Arg His
299          1060          1065          1070
301 acg ggc ggc ggt gac ccc gca gag cac cca ctg cta cgg cgc aag agc 3264
302 Thr Gly Gly Gly Asp Pro Ala Glu His Pro Leu Leu Arg Arg Lys Ser
303          1075          1080          1085
305 ctg cag tgg gcc cgg agg ctg agc cgc aag gcg ccc aag cag gca ggc 3312
306 Leu Gln Trp Ala Arg Arg Leu Ser Arg Lys Ala Pro Lys Gln Ala Gly
307 1090          1095          1100
309 cgg gcg gcg gcc gcg gag tgg atc agc cag cag cgc ctc agc ctg tac 3360
310 Arg Ala Ala Ala Ala Glu Trp Ile Ser Gln Gln Arg Leu Ser Leu Tyr
311 1105          1110          1115          1120
313 cgg cgc tct gag cgc cag gag ctc tcc gag ctg gtg aag aac cgc atg 3408
314 Arg Arg Ser Glu Arg Gln Glu Leu Ser Glu Leu Val Lys Asn Arg Met
315          1125          1130          1135
317 aag cac ctg ggg ctg ccc acc acc ggc tac gag gac gta gca aat tta 3456
318 Lys His Leu Gly Leu Pro Thr Thr Gly Tyr Glu Asp Val Ala Asn Leu
319          1140          1145          1150
321 aca gcc agt gat gtc atg aat cgg gta aac ctg gga tat ttg caa gac 3504
322 Thr Ala Ser Asp Val Met Asn Arg Val Asn Leu Gly Tyr Leu Gln Asp

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L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date